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PROTECTION PLOTS
LENGTHEN LIFE OF STOCK TANKS AND AID IN
CONTROLLING EROSION

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PROTECTION PLOTS
LENGTHEN LIFE OF STOCK TANKS AND AID IN
CONTROLLING EROSION ¹

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A stock-proof fence around desilting or protection plots above range stock tanks is fast coming to be recognized as one of the most effective, and yet one of the simplest, means of prolonging the useful life of such stock waters. Such plots also help cure existing erosion damage and lessen the danger that tanks will create new erosion problems in the drainage.

In the Southwest, where stock tanks are a vital part of ranching operations, many tanks depend on run-off for their supply. Each time a muddy flow comes down the drainage the tank loses costly water storage capacity because it not only fills up with mud but also, as it fills up, a greater proportion of the stored water is exposed to evaporation.

¹ Note: This material originally was used as an article which appeared in the June issue of the Arizona Stockman. The Range Conservation Division believes, however, that the information herein will be useful and of interest to personnel throughout the Region.

How much silt such flows carry depends on how well the drainage above is covered with grass or how badly gullied and washed it may be. Deposits of two and three feet of silt in a single year have been observed at some tanks in southern Arizona. In other locations, where grass was better above the tank, only a few inches of silt were laid down.

In addition to using the range properly to keep as good a grass cover as possible, ranchers are turning to desilting plots as a partial answer to this continued silting damage to their tanks. The plot, protected from grazing (and sometimes seeded if native vegetation is too sparse), soon becomes densely grown over--usually annual weeds at first. Then come grasses and other plants which form a filter through which flood waters must pass before entering the stock tank.

As muddy water passes through the desilting plot its force is somewhat broken by the obstacles it encounters in form of vegetation. Once slowed down a little, it spreads out and drops much of its silt load. Thus, the flow enters the tank with clearer water whose damaging force is largely broken. Some of the silt which otherwise would fill the reservoir has been lost in the grass upstream. As vegetation continues to increase it tends to tie down this silt which has been deposited in thin layers over the desilting area.

At the same time the protection plot often serves to heal raw cuts or channels immediately above the reservoir. Whether these cuts and channels existed before the tank was built in the drainage or worked

back from it afterward, establishment of heavier grass in the fenced plot will usually heal them up.

In some cases it may even be profitable to fence off an adequate plot immediately below the tank, also. If the drainage area provided more than enough water to fill the tank and floods occasionally overflow through the spillway, the land just below the reservoir may need the added protection of heavy grass. Gullies or headcuts formed by concentrated flow from the spillways may work back upstream, endangering the tank itself, to say nothing of the erosion damage and loss of grass lands below.

The fenced enclosure above a stock tank has another advantage in that it keeps cattle from trailing directly down the stream bed either to or from water, as they often do. The protection plot causes stock to approach the tank from other directions and gives the stream bed a chance to stabilize as it possibly would not with undue concentration of livestock.

A graphic example of just this phase can be seen Antelope Tank on the Three Links Cattle Co. ranch west of Willcox. Dozens of parallel trails down the bottom of the draw eroded into narrow gullies just above the tank site. Now that area is enclosed in a desilting plot and these gullies, after two years, are nearly filled with silt which has been deposited. Grass is growing dense and high and is providing a definite protection for the company's investment in that valuable stock tank.

Ranchers are pointing out that wildlife, such as quail and other birds, benefits from the food and cover these protection plots come to offer. This is important, for too often such birds have difficulty in finding adequate food, cover and water on range areas. The fenced plot, coming to the edge of the reservoir, gives wildlife a chance to water without having to venture so far from protective cover, greatly exposed to predators and hunters.

Good demonstration of the effectiveness of desilting or protection plots can now be seen on many areas within the Southwest Region. On the Secley ranch, in the San Carlos Area, seven desilting-type charcos with fenced desilting plots were constructed in 1938.

A luxuriant growth of tobosa and sacaton grasses has sprung up in these areas. If they had not been fenced, too heavy use would have occurred because of their nearness to water. It is believed that such overuse would have materially added to soil washing and silting, which, in turn, would have shortened the useful life of each tank.

On the Three Links Ranch, mentioned before, there are also seven tanks being protected by desilting areas. In all plots deep deposits of silt show just how much the effective life of the tank below has been prolonged. Harry Saxon, manager and part owner of the company, has been practicing good management for several years and is particularly proud of these plots. He thinks enough of them that his riders are constantly admonished to watch plot fences and gates carefully so that cattle will not break in and eat down the protective growth inside.

Soil Conservation Service field men frequently find that stockmen, not actually under cooperative agreement with the Service, are adding more of these protective plots after having seen their effectiveness.

One SCS Range Conservation employee in the Region reports that every single prospective cooperator who had seen desilting plots in operation insisted that they be included in the soil conservation plans being worked up for his own ranch.

SCS has helped dozens of ranchers in the Southwest Region to establish such stock tank protection plots, believing that where stock tanks are economically justified as part of a range conservation program -- to obtain more uniform livestock distribution and facilitate proper management -- some means of insuring their longer effective life and lessening of related erosion dangers is necessary.

As a matter of fact, this Service feels that no stock tank should be built in a given location if it will create or stimulate a new erosion hazard which cannot be overcome by protection plots or other protective measures.

For instance, if a tank is built immediately in a swale which has dense grass because of frequent natural irrigations, the tank may hold up all but these infrequent flows which are large enough to go over the spillway. Because of this change from frequent to infrequent irrigation, the composition and density of the grasses in the swale may change so greatly that the bigger flows which do come will cause erosion damage on the land below the stock tank. A careful analysis should be made of existing conditions and possible ecological change before advising disturbance of the soil and grass in such locations.

One cannot recommend any fixed length or acreage for such plots but decide the size and location for each one according to the size of the stock tank, general topography of the country and the amount of actual or potential vegetation.

One important point to be considered is that the fenced area should go far enough to the side of the stream bed or water course so that at no time will a large flow of water sweep around outside the plot. The increased vegetation in the protection area checks the flow of water, causing it naturally to seek the course of least resistance-- which may be around the sides if the plot is not wide enough.

Also, where there is some flow from either side into the main waterway, it may be well to take in enough area with the plot so that the immediate banks or slopes will not wash and go into gullies which will feed added silt into the tank. This again will force the stock trails away from the stream bed and up high enough so that any new trails will not be so likely to contribute to silting or gullyng.

It is equally important that the fence extend down to, or even slightly below, the lip of the tank. This will materially aid in the prevention of head-cuts. If the tank is of a desilting charco type fed from a collection dike above, the entire dike should be included in the fenced area.

Many stockmen, like those mentioned are profiting nowadays from this simple, protective device which is paying dividends in longer stock tank life and better land use.

